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Before the
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In the Matter of	)	
	)	
Request by the Advanced Television	)	RM-8067
Systems Committee for Amendment of	)	
the Commission's Rules to Permit the	)	
Transmission of Ghost Canceling Reference	)	
Signals on Line 19 of NTSC Color	)	
Television Transmissions	)	

Comments of the
NATIONAL ASSOCIATION OF BROADCASTERS

The National Association of Broadcasters[1] ("NAB") hereby submits its comments in response to the Petition for Rule Making filed by the Advanced Television Systems Committee ("ATSC Petition"), asking the Commission to amend section 73.682 (a)(21)(iv) of the Commission's Rules.[2] ATSC has asked that the Commission restrict the kind of signal that can be placed on Line 19 of the Vertical Blanking Interval (VBI) of NTSC color television transmissions to the Ghost Canceling Reference (GCR) signal standardized by ATSC.[3] NAB fully supports the ATSC Petition and urges the Commission to grant ATSC's request as soon as possible.

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[1] NAB is a non-profit incorporated association serving and representing America's television and radio stations and all the major networks.

[2] Public Notice, Report No. 1905, released August 27, 1992.

[3] ATSC Petition, supra, at Appendix A.

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List A B C D E

I. Introduction.

Multipath ghosting, a pervasive and annoying artifact of terrestrial television transmission, has been a persistent problem since the infancy of television broadcasting. The broadcasting industry and the viewing public it serves have long suffered the effects of ghosting and the industry has looked forward to the development of technology which could overcome these effects. Technically and economically feasible solutions to ghosting have not been practical until recent years with the advent of advanced digital processing technology. In July of 1989, NAB requested that ATSC investigate ghost canceling and, if possible, proceed with the development of technical standards in this area.[4] NAB commends the ATSC for its success in achieving this goal. With the emergence of a widely supported ghost canceling standard and with the FCC's protection of line 19 for this use, the broadcast, cable and receiver industries should rapidly begin implementation of ghost canceling technology. Soon, the public should see a vast improvement in the quality of television reception.

II. The ATSC Evaluation Process was Thorough and Fair.

NAB actively participated in all ghost canceling-related activities of the ATSC. All facets of the evaluation and standardization process were thorough and fair:

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[4] The broadcast industry supported this request for standardization. As cited in the ATSC Petition, in a 1990 nationwide survey of chief engineers conducted by NAB, 47% rated a ghost canceling standard as Very Important and another 40% rated ghost canceling as Somewhat Important.

(1) potential ghost canceling system proponents were actively sought and all potential system developers were allowed an opportunity to present their systems for consideration;

(2) all affected industries participated fully in the ATSC selection process including broadcasting, television set manufacturers, the cable industry and others; and

(3) proponent systems were subjected to a complete and exhaustive set of comparative tests including computer simulations, laboratory tests and over-the-air and cable system field tests.

NAB firmly believes that ATSC made every attempt to solicit and properly evaluate all serious ghost canceling proponents and that ultimately the best GCR signal was selected as the ATSC standard.

III. Line 19 in the Vertical Blanking Interval is the Best Choice for Placement of the GCR Signal.

NAB actively participated in the task force formed by the ATSC Specialist Group on Ghost Canceling to select a single preferred VBI line for the GCR to be recommended by the ATSC. NAB supports ATSC's premise that a single line committed to the GCR signal will lead to the most rapid and straightforward implementation of ghost canceling by broadcasters and availability of receivers at the lowest cost. ATSC's recommendation of line 19 for the GCR balances a number of factors and is based on the following considerations:

(1) current and projected usage of VBI lines by broadcasters;

(2) current and projected usage of VBI lines by cable system operators;

(3) the effect of GCR placement in the VBI on existing consumer equipment;

(4) the effect of GCR placement in the VBI on design of receivers with ghost canceling capability;

(5) ease of implementation in broadcast plants; and

(6) the small, decreasing number of VIR-equipped television receivers in the field.

NAB fully supports ATSC's selection of line 19 for placement of the GCR.

IV. The ATSC GCR has Excellent Inherent Properties Which Will Allow Significant Improvements in Overall System Performance as Ghost Canceling Decoder Technology Improves.

Laboratory and field tests in the ATSC evaluation process showed that prototype decoders using the ATSC GCR were extremely effective in eliminating or reducing the visibility of ghosts in a variety of situations. However, as state-of-the-art decoder technology improves, the design of the ATSC GCR contains a number of desirable attributes which will allow even better cancelation performance to be achieved. These desirable properties include high signal energy, flat frequency response, linear group delay, large cancelation range, potential for cancelation in one field time, and usability with a variety of processing algorithms and with

hardware of flexible complexity.[5] The ATSC GCR will not become obsolete since it contains significant "headroom" for better system performance through improvements in decoder technology.

V. Conclusion.

NAB urges the Commission to grant the request of the ATSC to modify the Commission's Rules to reserve line 19 in the VBI for the optional, but exclusive, use of the ATSC GCR. Implementation of ghost canceling using the ATSC GCR in broadcast transmissions can provide great public benefit through significant improvement in the received quality of over-the-air television transmissions. The ATSC standard is the result of strong technical proposals from the proponents, a highly competitive and thorough evaluation process, close inter-industry cooperation and skillful leadership from the Advanced Television Systems Committee. The potential benefits of the ATSC standard will be realized through rapid, widespread implementation by the television industry. Adoption of the standard by the Commission will accelerate that process.

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[5] See Herman, Stephen, "An Overview of Ghost Cancelation Reference Signals", 1992 NAB Broadcast Engineering Conference Proceedings, pp. 78-81.

Respectfully submitted,

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